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Editor :
SUTINDER SINGH

A Varsity Moves into Villages

M.P. Boraian*
N. Narayanasamy*

Established in 1956, the Gandhigram Rural Institute (GRI) functioned as one of the 14 Rural Institutes in India under the auspices of the National Council for Rural Higher Education, Ministry of Education, Government of India. In course of time all the other Rural Institutes got affiliated to neighbouring universities, but GRI maintained its independent identity and pursued its mission with dedication and determination. After two decades of service, GRI attained the status of a Deemed University in 1976, conferred by the Ministry of Education, Government of India. Over 40 years have passed since its origin, but the goal of GRI has never veered from its originally chartered course.

Extension in Action

'Extension', introduced by the UGC in 1976, as the third dimension of higher education throughout the country was the primary concern of GRI even twenty years before that and has also been the pivotal component in the succeeding decades. Unlike in conventional universities and colleges, extension commands prime place in the policies and programmes of GRI. Teaching and research programmes are integrated with extension.

'Village stay' constitutes the spinal cord of our rural extension programmes. For several years, we followed the 'mass approach', i.e. moving out to the villages *en masse* for a period of 7 to 10 days, almost deserting the Institute for the temporary village campus. For operational convenience and to avoid total disruption of academic activities, this was subsequently revised to 'group approach', wherein the final year graduate and postgraduate students move into the villages for a short period of 4-5 days. It has now been incorporated into the statutes, whereby a village camp of about a week's duration is mandatory during every semester.

Under this system, students and teachers drawn from every faculty, department and centre select a village and camp there. Individual families, schools, temples, churches, community centres, panchayat offices and health centres serve as their abode during this short period. They live, learn, teach, train, experience, exhibit, study, share, organise, observe, clean, cook, rest and relax in the village. In the process, they help educate, enlighten, empower, counsel, activate and motivate people by improving their knowledge, raising awareness, changing their attitude and influencing their behaviour towards better quality of life.

Students and teachers make large gains from their rural experience. Their knowledge, skills, attitude, behaviour and motivation for service register substantial changes in a short period. Their learning from the village and the villagers enhances their practical knowledge, instils confidence and makes them more resourceful. Ultimately, the rural experience through extension enriches the two other components viz. teaching and research. The teaching and the reasearch programmes in GRI are, therefore, intricately interwoven with the rural extension programmes.

The activities carried out during our recent camp this year included

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undertaking of *shramdan* (manual labour) in the village, organising special camps, demonstration, conducting surveys, arranging visits, dialogue and lectures and organising sports and cultural programmes. *Shramdan* activities ranged from construction of parapet walls, laying of roads and playground, planting of seedlings in community lands and installation of smokeless chulhas in private homes. Camps comprised a dental camp in a flourosis endemic area and an animal health camp. Popularisation of science through awareness, teaching and experiments, computer awareness, chlorination of drinking water, and low-cost supplementary food were the activities taken up for demonstration. Surveys covered themes like status of women, child labour, entrepreneurship, employment and feasibility studies. Debating, trekking, meditation and prayers, street plays, cultural programmes and sports competitions were the other activities taken up.

As a result of organising this camp, the distance between students and teachers was lessened, understanding between graduate and master's students improved inter-personal relations between senior and junior teachers strengthened and acquaintance between students and villagers developed further. Students managed crisis situations, the faculty tackled complicated issues, and, together, they lubricated social situations with the villagers wherever there was friction. When the situation warranted, the teachers cleaned the toilets and students took charge of cooking. Both the teachers and the students learned the dignity of labour by practice. However, at times, the team also bore the brunt of local customs which demanded people to remove shoes while walking through the street in a Zamindari village and the girls were disallowed entry into the local temples. Abuses hurled by alcoholics on the team was a sporadic experience.

Limitations

Timing of the camp in a sweltering summer was the most serious problem, resulting in some of the students being affected by measles. The short duration of the camp was another serious drawback for, as the students and teachers were gradually getting closer to the community towards the last day, the camp ended. The other problems were not serious and were tackled skillfully by our team. For instance, on the opening day of the camp in a village, when the team witnessed the death of a villager, it undertook the task of clearing the pathway to the burial ground and thus pleased the entire village which was otherwise soaked in grief and regarded our arrival with resentment. When a cook deserted the kitchen in another village, the students got down to the job of preparing meals for the whole team.

In another village, finding the toilet in the Mini Health centre unusable, the teachers soiled their clothes to clear the toilet clogged with dirt and filth, readied a temporary septic tank and made the toilet usable. This pleased the local Health worker whose long felt need was thus satisfied. In yet another village, one of the drunkards who obstructed a discussion on debt recovery was invited to preside over a cultural programme on the next evening. He felt sorry for his behaviour on the previous day, accepted the invitation as a privilege and remained sobre throughout the camp. The team thus managed crises, solved problems and learnt the practical side of rural management.

In sum, the camp enabled the students to develop 'voluntarism', the spirit of service, helping tendency, ability to withstand difficulties, and manage crises with tact and confidence. People were cooperative by and large. Even those who were indifferent initially, changed gradually, and, those who stood at a distance gradually came closer. Our camp belied the traditional theory that it is difficult to enter the village but easy to come out. Instead, we learnt that it was easy to enter the village but difficult to come out, because of the affinity we developed with the community during our stay, work and interaction.

For a few days, thus, rural communities became our campus, their tea stalls served as our libraries, farms and homes became our laboratories, the *shramdan* sites proved to be our playground, villagers became our teachers and their experience turned out to be our textbooks. We learnt from the villagers the realities of rural life and were able to comprehend textbook theories better through this practical exposure. Against this background, GRI considers rural extension not as the 'third' dimension but as the central dimension, linked to teaching on the one hand and research on the other.

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communication should, however, be brief and to the point.

Management Education : Challenges and Opportunities II

M.S. Sodha*
R.D. Pathak**

Introduction

After the publication of the authors' recent paper[1] on management education, some issues, not covered in the presentation have been highlighted in publications and by their colleagues in person. In the present paper (which may be considered as Part II of the discussion) the authors have specifically addressed these issues.

Shejwalkar[2] has pointed out the futility of comparison of usual management institutions with IIMs and the desirability of a mandatory assessment/accreditation, along with AICTE, assuming an advisory and encouraging role rather than a regulatory one.

Rao[3] has stressed the importance of life oriented values in management education and suggested inclusion of business ethics/values and various aspects of stress management in the MBA syllabus. Pathak et al[4] have also discussed at length value oriented management.

Two investigative articles[5,6] in *Business Today* on restructuring Indian Institute of Management, Ahmedabad (IIM-A) and rating of business schools also need highlighting; these should be part of status report on management education. The vision for a Business School, presented in these articles is also worthy of consideration. The methodology in rating[7] of business schools, adopted in U.S.A. also needs wider dissemination.

The Number Game

Rao[3] bemoans the large number of MBAs, coming out of business schools with tremendous variation in quality, in view of the limited plum jobs; a pessimistic future of management education is predicted. Shejwalkar[2], on the other hand, emphasises that the management education cannot only survive but grow in a marketing friendly way i.e. that the schools should be constantly changing their programmes to meet the varying needs of different segments of business and industry; flexibility is the key *mantra*. One of the areas, specifically highlighted by Shejwalkar[2] is marketing in rural areas, (including field work); in fact multinational companies have already started employing MBAs to this end. If the MBAs can be sufficiently trained/motivated to be entrepreneurs, the question of employment of MBAs will be redundant.

Haves and Have Nots

It is ironical that the expectations of the government, professionals, business, industry and public from the IIMs and other business schools, are (despite enormous differences in funding, quality and number of faculty members and the infrastructure) about the same. Little credit is given to business schools (mostly university departments and affiliated colleges), who despite low government grants have come up by hard work and innovations. The DAVV, Indore story has been told in an earlier paper.[1]

Bharatidasan Institute of Management (BIM) at Thiruchi is characterized by unique industry-university collaboration in running a management school. The BIM model is worth emulating by old or new schools of management, striving for excellence.

While it is nice to have institutions like IIMs, to serve as role models in management education, the models are by no means replicable, with limited funding. In view of the wide disparity in funding of IIMs and other schools, there is a strong case for optimal distribution of available funds between management schools (including IIMs) for maximum impact. The least which can be done is to make sure that IIMs play a significant role in improvement of management education in other schools.

IIM-A : Restructuring[5]

Scenario

To illustrate, the problems and challenges, facing a good business school in the present environment and strategy for leadership, excellence and relevance, the case of IIM-A, the top rated[6] business school in India with the alumni, occupying a number of top positions in Indian business and the gradu-

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ates, having excellent job prospects, nationally and internationally has been discussed in this section.

A survey of corporate recruiters by Xavier Labour Relations Institute, Jamshedpur in 1997 has revealed that they value team work potential, on the job performance and leadership skills, over problem solving ability, which has been the main focus of management education at IIM-A; in other words the corporates demand that their managers (or management trainees) are apt at managing real life situations and not so much at analysing and solving problems.

Despite inadequate exposure of students to the corporate world, absence of hands on exposure, the intense interest of all companies in hiring IIM-A graduates is primarily on account of the stringent admission procedure, which guarantees highly able students, rather than, the value addition by the institution. The institution's focus on management sciences, and the lack of good contact with the corporate sector may not be adequately preparing the graduates for the responsibilities of a manager. Further the institute is not consciously trying to benchmark itself, against other internationally well known schools in terms of technology, research, consultancy, syllabi, and pedagogy. The investment needed to catch up with global standards is also missing. An obvious solution to this is a campaign to raise donations and resources for development, using the alumni, as the key player; IITs have shown remarkable results in this respect.

The success of IIM-A in exploiting the case study technique to the fullest potential, has over looked other innovations/options or bringing corporate world realism in studies; the use of simulated games holds immense potential for bringing realism to the academic studies. The concept of properly designed "on the job training" does not seem to have been sufficiently explored. The premium, which the US business/industry for admission to business schools is also missing in the IIM-A (and All India context). Due to the highly structured academic programme at IIM-A, the students are less likely to develop lateral thinking and innovative ability, necessary to arrive at efficient ways of doing things. While others have been engaged in introspection, IIM-B (Bangalore) has worked at gaining global exposure and visibility.

Faculty

The annual pay of a professor at IIM-A ranges between 1.60 lacs to 2.20 lacs p.a., as compared to the average starting salary of 3.20 lacs p.a. for the MBA class of '98. The faculty is able to retain only half the amount, it may earn from the consultancies and of course pays taxes on it; the system thus hardly provides any financial incentives for this activity (there is of course no financial incentive at all for research). With 62% of the faculty above 45 years in age, new initiatives and innovations are hard to come by. It is very difficult, under the circumstances to attract the best of new talent to teaching.

The Change

The Committee on Future Directions (CFD) at the institution is taking a hard look at the syllabus for MBA and new programmes, but has not addressed itself enough to teaching (particularly faculty members). The new courses, introduced by the institute in last few years are strong on concepts but not much skill oriented. The areas of lateral thinking, winning of people and decision making in realistic environment deserve special attention.

IIM-A is also planning to set up an International Management Centre by 2000 and is negotiating alliances with business schools abroad.

The Competition

In addition to other existing institutions in India, closely behind IIM-A, the latest competition will probably come from new schools, set up with international collaboration like the one to be set up by Mc. Kinsey & Co., in association with leading Indian corporates; the academic programme is being deevloped by deans of leading business Schools in USA.

Line of Action

It is important to distinguish between an academics driven management institute and a business driven business school and decide as to which of the two will be a thrust activity. While a few or very few management institutes should exist to support the applied aspects, the main thrust has to be on the business driven business schools. The development of an excellent business school is by no means a low intellectual or low tech. activity; it is the change on emphasis (rather than quality) which needs to be recognized. Some steps toward excellence, which may be taken by IIM-A are :

(i) Alliance with leading Business Schools.

(ii) Enabling a stream of significant long, medium and short term consultancy assignments to be undertaken.

(iii) Establish norms (if possible quantified) for productivity of teachers specially in research/consultancy, because an excellent business school is not possible without excellent contemporary and relevant research.

(iv) Establish more business schools under franchise in India and abroad.

(v) Start regular management development programme for junior, middle and senior managers (including CEOs).

(vi) Reorganize itself into a business organization, corporatise itself and possibly diversify (a BBA programme may be considered).

Prof. Bala V. Ramachandran of J.L. Kellogg School of Management has predicted that "The IIM-A will not be on the world map, five years later. It is moving in the right direction but other schools, around the globe are improving at a much faster rate".

Let this prophecy be an eye opener to all business schools in India.

Evaluation[6]

To assist the corporate recruiters and aspiring students, *Business Today* commissioned the Consortium for Strategic Management and Organizational Development (Cosmode), to develop a methodology for evaluation of business schools and arrive at the rankings. Cosmode took the following parameters into account :

1. Feedback from Corporate Recruiters, students and teachers.
2. Facilities
3. Curriculum
4. Placement
5. Talent of Teachers
6. Perception of practicing managers from the same School about the alumni.
7. Satisfaction Level of Corporates.

It is interesting to compare the methodology[7], followed in the ranking of US business schools, which takes into account

1. *Reputation* (40%) : opinion survey of business school deans and corporate recruiters.
2. *Placement Success* (35%) : Median Starting Salary, Percentage employed, within 3 months of graduation etc.
3. *Student Selectivity* : average GMAT score, average undergraduate G.P.A. and percentage of applicants admitted.

The detailed criteria for evaluation and *Business Today's* perception of a futuristic business school are given in the following write up reproduced here with the kind permission of *Business Today.*

The Methodologies

The Background. In may, 1997, (BT) commissioned the Hyderabad-based organisation design and *Business Today* strategic management consultancy, Consortium for Strategic Management & Organisation Development (COSMODE), to design and execute a survey to rank all institutions offering postgraduate courses in business management — a.k.a. the country's B-schools.

The Universe. The starting point was the entire set of the 422 B-schools whose MBA programmes had been approved by the All India Council for Technical Education (AICTE) till December 31, 1995, the last date upto which a complete list of approved B-schools was available. Institutions offering specialised — as opposed to general management — courses were eliminated because of problems of comparison, as were those which had not produced at least two batches of graduate students. Questionnaires were then sent out to the 125 B-schools that emerged from the filter, asking for information on the internal parameters. Only 50 B-schools responded with complete information, and these were then rated and ranked.

The Rating. The model developed to evaluate B-schools has two analytical components : objective and subjective. The former scores a school on internal parameters : the quality of faculty, the students, and the curriculum; the infrastructure facilities; the number of applicants per seat; and number of corporate recruiters. The latter captures the perceptions of recruiters, faculties, students, and alumni.

The Survey. Details of the physical and academic infrastructure were provided by the B-schools and verified by BT and COSMODE. The subjective survey of the recruiters, the B-school directors, the faculty, the students, and the alumni was conducted by COSMODE.

The Scoring. Each B-school was evaluated on an overall score of 1,000. The scores were assigned using the following criteria :

Objective Score (400)

The total score was the aggregate of the following :

BT's futuristic b-school of the future

the infrastructure

Classroom Space	30,000 square feet
Teaching Aids	PCs; Video-conferencing facilities; High-speed Internet links
Administrative Space	20,000 square feet
Library Space	10,000 square feet
Annual Library Budget	Rs. 2 crore
Books : CD-Roms Ratio	2:1
Library Resources	On-line connectivity with Indian and global databases
Students : Faculty Ratio	6:1
Male . Female Ratio	1.1
Student Computer Ratio	1.1
Residential Space	15,000 square feet for students; 15,000 square feet for staff
Alliances	With B-schools in the US and Europe for the exchange of faculty, students, and course material With companies in India, US, and Europe for management development programmes, and case and curriculum development

the admission procedure

Pre-requisites

- Minimum graduation percentage of 60 (or grade point average of 6 on a 10-point scale)
- Minimum work experience of 3 years for students with an engineering background, and 5 years for those with a non-engineering background
- A 95 percentile, or higher, GMAT score

Evaluatory Components

- Grade Point Average
- GMAT Scores
- Essays
- Recommendations
- Interview
- Work History

the faculty profile

Pre-requisites

- A Ph.D from a premier university or B-school
- A minimum work-experience of 5 years. At least 10 papes published in international management journals
- Research interests

the teaching methodology

Theoretical
Practical

- Case Studies
- Lectures
- Simulation Exercises
- Interactive Games
- Field Trips
- On-The-Job Training

the curriculum

Compulsory Courses

- Accounting & Costing
- Business Communication
- Business Law
- Comparative Business History
- Corporate Finance
- Corporate Strategy
- Economics
- Electronic Business And The Internet
- Evolution Of The Organisation
- Evolution Of the Individual
- Family Business
- History Of Management Thought
- Infotech Management
- Language I (Spanish/French/German)
- Language II (Japanese/Chinese)
- Manufacturing Management
- Marketing Management
- Mathematical Modelling
- Psychology & Sociology
- Statistics

Elective Courses

- Accounting Tools ABC & The Balanced Scorecard
- Advertising & Sales Management Games
- Applying Chaos Theory To Business & Market Models
- Asian Management Models
- Case Studies In Privatisation
- Consumer Behaviour & Services Management
- Emerging Techniques & Trends In Finance
- Forecasting & Modelling Techniques For Economics
- Financial Tools I : Security Analysis & Portfolio Management
- Financial Tools II . International Reporting Norms & Financial Management
- Global Money Market Games
- Global Trade, Markets & Trade Blocs
- Government & Big Business
- HR Tools I : Compensation Methodologies & Appraisal Systems
- HR Tools II : Labour Legislation
- Infotech As A Strategic Tool
- Lab In Group Dynamics
- Manufacturing Tools : Lean Production, MRP, & ERP
- Management Tools . Benchmarking & BPR
- Managing Start-Ups Games
- Marketing Tools Quantitative & Qualitative Research
- Mergers & Acquisitions Games
- MIS & DSS Games
- Models Of Leadership
- Motivation & People Management Games
- Neural Networks For Business Applications
- Pattern Recognition, Artifical Intelligence, & Expert Systems
- Regulatory Environments
- Stockmarket Game
- Technology Forecasting
- Understanding The Commodities Market
- Understanding Strategy I : A Historical Perspective
- Understanding Strategy II : Competition

Students & Faculty Profile & Curriculum (180)

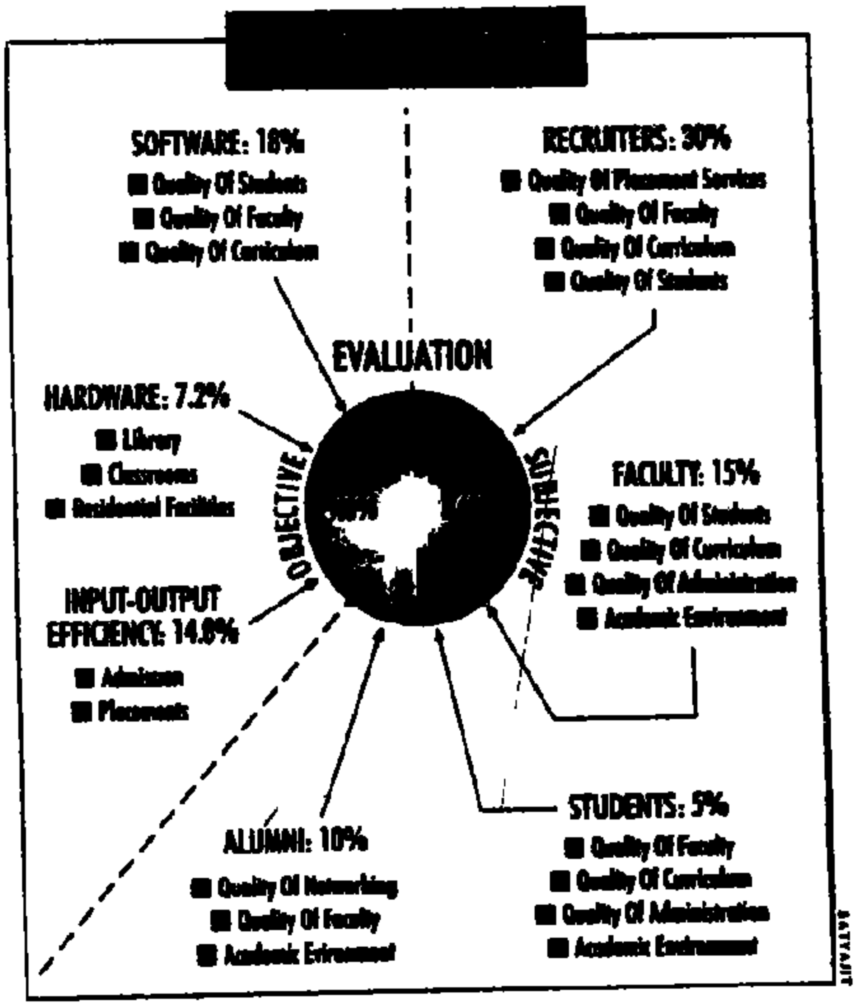
- If the admission process includes a written test, group discussion, and interview : 16. If any of these components are absent : 8.
- If the school requires at least 50 per cent marks at the graduate level : 12. Otherwise : 0.
- If the school offers more than 6 specialisation streams : 24. For 4 or 5 streams : 16. For less than 4 : 0.
- If students are evaluated through a continuous process : 24. If the evaluation is through end-of-term examinations : 12.
- If the school has a Ph.D programme : 24. If not : 0.
- If the student-to-faculty ratio is less than 5:1:32. If it is between 5:1 and 10:1:24. If it is above 10:1:8.
- If the proportion of Ph.Ds in the faculty is more than 75 per cent : 24. If it is between 50 and 75 per cent : 12. If it is between 25 and 50 per cent : 4.
- If the faculty takes consulting assignments : 8. If not : 0.
- If the guest faculty-to-full-time faculty ratio is between 1:5 and 1:2:16. If it is between 1:2 and 3:4:8. If it is higher than 3:4:0.

Library & Classroom & Residential Facilities (72)

- If the annual library budget is more than Rs. 25 lakh : 24. If it is between Rs. 10 lakh and Rs. 25 lakh : 12. If it is between Rs. 5 lakh and Rs. 10 lakh : 8. If it is below Rs. 5 lakh : 4.
- If the student-to-computer terminal ratio is 4:1 or less : 16. If between 4:1 and 10:1:8. If more than 10:1:4.
- If there are less than 30 students in each MBA class : 16. If there are between 30 and 60 students : 8. If there are more than 60 students : 4.
- If each student gets a single room in the hostel : 16. If students share hostel rooms : 8.

Admissions & Placement (148)

- If more than 50 companies attend the schools summer placement programme : 16. If between 30 and 50 do so : 8. If less than 30 do so : 4. If none does so : 0.
- If more than 60 companies participate in the school's final placement programme : 32. If between 30 and 60 do so : 24. If between 1 and 30 do so : 12. If none does so : 0.
- If each student gets more than 1 job offer : 20. For exactly 1 job offer : 12. For less than 1 job offer : 4.
- If the average monthly salary offered is above Rs. 18,000 : 40. If it is between Rs. 10,000 and Rs. 18,000 : 24. If it is below Rs. 10,000 : 12.
- If the school receives more than 150 applications per seat : 40. Between 100 and 150 applications per seat : 24. Between 51 and 100 applications per seat : 16. Between 0 and 50 applications per seat : 8.



Subjective Score (600)

Recruiter Score (300)

Three hundred corporate recruiters were asked to score each B-School — 58 responded — by evaluating the quality of the students they had hired from each on a 10-point scale, with 10 standing for excellent, and 0 for very poor. Only schools which were rated by at least five recruiters were given scores, while the rest were given default scores of 1. A weightage of 30 was applied to the mean scores to arrive at the final score.

To compensate for the bias in assessment of their own B-schools by faculty and students, and for the differences in standards imposed by alumni of different schools, a normalising factor was applied to the scores given by faculty, students, and alumni. The normalising factor for each school was computed separately, using the recruiter and director weightages. For both, the weightage was calculated on the basis of the rank that they assigned to each school, using the formula 1.01 - (0.01 x rank). Schools that were not ranked, however, were given weightages of 0.50.

For the students faculty, and alumni of each B-school, the evaluatory component of each parameter comprised a series of statements to which the students were asked to respond on a six-point scale, ranging from strongly disagree (1) to strongly agree (6). The mean of the scores for each set of statements was calculated and this was multiplied by the normalising factor. The weightage applied were as follows :

Faculty Score (150)

Three members of the faculty of each of the 50 B-schools were asked for their perceptions of four parameters : Academic Environment (score : 6, weightage : 2.5), Quality Of Students (score : 6, weightage : 7.5), Quality of Curriculum (score : 6, weightage : 10.0), and the Quality of Administration (score : 6, weightage : 5.0).

Students Score (50)

Between five and eight students of each of the 50 institutes were asked for their perceptions of four parameters : Academic Environment (score : 6, weightage : 0.8333), Quality of Administration (score : 6, weightage : 1.6777), Quality of Faculty (score : 6, weightage : 2.5), and the Quality of Curriculum (score : 6, weightage : 3.3333).

Alumni Score (100)

Ten former students of each B-school were asked for their perceptions of three parameters : Quality of Networking (score : 6, weightage : 5.55), Quality of Faculty (score : 6, weightage : 5.55), and the Quality of Curriculum (score : 6, weightage : 5.55). Schols whose alumni did not participate in the survey were given default scores of 0.

The final score for each B-school was computed as the aggregate of its Objective Score, Recruiter Score, Faculty Score, Students Score, and Alumni Score. Overall ranks were given on the basis of this score. The survey was conducted and coordinated by a COSMODE team comprising Kalpana Sinha, director; Himanshu Tambe, senior consultant; Javed Jamal, associate consultant; V. Marutish, associate consultant; and Pavan Mohan, research associate; and by a BT team consisting of R. Sukumar and Pareena Kawatra.

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PS. : The authors have come across a book review of an excellent book on "Reappraising Management Education . Perspective for the Future" by Ishwar Dayal (Mittal Publications), Delhi.

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Higher Science Education & Research in Ninth Five Year Plan

Satyanarayana Pattnaik*

Science & Technology (S&T) in post-Independence period in India has received considerable attention. The first Indian Prime Minister, a patron of science, pointed out that 'Temper of Science', the human face condition that fosters and rejoices in the pursuit of science, is ultimately responsible for science making possible. It is science alone that can solve the problem of hunger and poverty. The future belongs to science and to those who make friends with science, he emphasised. The vision of Nehru, however, led to development of viable S&T infrastructure in India and every Five Year Plan programme in S&T emphasised science education, research and training, the only basis of national development. Today about 90 per cent of the 234 universities (including deemed universities) and 75 per cent of the 8,500 colleges are providing higher science education and research in the country.

The thrust provided to Indian S&T has always been aimed at making S&T underpin the growth of agriculture, industry, infrastructure, and services so that the per capita income rises across the board and the economy becomes globally competitive. At the time of Independence, the S&T base of the country was very small. But today, the scientific infrastructure consists of a wide range of laboratories, institutions, in-house R&D establishments on several disciplines and occupies top position among the developing countries in technology development. The country's prominence in nuclear science, space science, communication, defence systems etc, just to mention a few, is unquestionable. The recent Pokhran nuclear explosion has established the status of super power for India. Further, efforts are being made in developing several newly emerging areas of microelectronics, informatics/telematics, biotechnology, new materials, renewable energy sources, ocean sciences and several other areas of basic research so that benefits emerging from these fields would meet the challenges independent of foreign technology. In this context, the article picks some of the efforts outlined in the S&T Approach Paper of the Ninth Five Year Plan of the Government of India in respect of making S&T higher education research more relevant for development of the country.

Ninth Plan Approach to Science Education

The Ninth Plan paper has rightly identified several measures that need to be taken to make Indian science and technology more challenging and competitive in global scenario. The Plan paper envisages that inter-university centres which are providing valuable services to university community research should be encouraged by earmarking necessary support through the University Grants Commission (UGC) for smooth running of the existing centres and establishing new ones after appropriate assessment by a national body. Regarding utilisation of instruments and equipments, the Plan paper outlines for setting up Regional Sophisticated Instrumentation Centres (RSIC) at the universities and establishing advance research centres/groups in certain specialised fields such as optical material, condensed matter physics, low energy accelerator research, molecular electronics, laser instrumentation, colloids and surfactants, astronomy, astrophysics, and plasma physics.

Funding for Research

The Plan paper paid specific attention to reviewing of the operationalisation of research funds both at the individual research worker level and at the institutional level. This attempt is made to avoid the subscritical support. At the level of individual scientific worker, the research support would be based on the proven track record with maximum flexibility and autonomy in controlling the research funds and at the institutional level, there should be greater provision for long range programmes and infrastructure support, involving other related areas and departments. The Plan paper has emphasised setting up Centres of Excellence around outstanding scientists or group of scientists following a peer review system.

Basic Research

India is one of the top ranking countries in the field of basic research. The earlier Plan periods' support to the basic research has received a rather high attention. Though this may continue to a considerable extent, the Plan paper envisages the target goals in the sphere of basic research and associated higher science education which are not only determined by

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infrastructure available for R&D but also by several other major considerations. These include fierce technological competition during the transition to a liberalised economic environment, strengthening of the range and depth of scientific and technological capabilities which can be achieved through high quality basic research and responsive education system, sound scientific and technological base to fulfil societal needs and the need for recognition of the inter-connection of research in basic sciences with applied work, technology, engineering and production vis-a-vis national development.

The paper also mentions that efforts will also be made to provide long-term support for basic research in few strategic sectors such as structural biology, drug development and design, genome mapping and sequencing, etc. Priority will be accorded to the programmes of genetic enhancement, micro propagation parks and centres of excellence in areas such as brain research, molecular medicine, etc. While the role of the Government in supporting basic research, technology development and its application as well as the promotion of S&T infrastructure would continue at an accelerated scale, intensive efforts would be made to generate maximum resources for R&D from the production and service sectors.

Guidance for Basic Research

The Plan paper has paid due attention towards basic research through extra mural research (EMR) budget, presently being followed by several scientific departments such as Department of Atomic Energy, Department of Science, Department of Science & Technology, Council of Scientific & Industrial Research, Department of Bio-Technology. The Plan envisages that the EMR funding should be enhanced by carefully building up rigorous, objective, constructive and credible peer review systems. It has identified the need to provide autonomy in the use of such funds. Regarding steps in strengthening of the technical education, the Plan paper has suggested building up such a system of scrutiny for which guidance can be taken from the All India Council for Technical Education (AICTE).

Another source of guidance is the Science and Engineering Research Council (SERC) which is the major EMR funding source for basic research in all areas of science and engineering. The Plan paper envisages upgradation of the SERC mechanism to a significantly higher level with greater autonomy which can be explored for the formulation of broad R&D polices and providing direction regarding the setting up of national facilities, coordinated R&D programmes.

Improving Facilities for Basic Research

Similarly, the Plan paper has also initiated several measures for improving facilities for basic research at the universities and research institutions. One such step is revival of UGC programme of Strengthening Infrastructure in S&T (COSIST) as an independent programme. In addition, strengthening of programmes relating to Centers for Advanced Studies (CAS) and Special Assistance Programme (SAP)/Department of Special Assistance (DAS) programme would be taken up to make them much more responsive and stricter in their assessment evaluation aspects. The efforts of National Board for Higher Mathematics (NBHM) in supporting selected libraries to serve as regional resource centers in mathematics, may be expanded by establishing some regional science and engineering centres in selected institutions with networking facilities.

Improving Communication Facilities

As information and communication play a vital role at all levels in any research process, the Plan paper has emphasised that appropriate information technology be deployed to ensure greater dissemination of knowledge and information among researchers and technical community in various fields and more particularly in industrial and agricultural development. This can be achieved through full Internet connectivity with broad-band channels for multimedia facilities, networking libraries, computers, etc. This would be a major information resource not only for basic research in science and engineering, but also in all academic fields including health, medicine and humanities. Apart from these, the Plan has recommended the establishment of a National Manpower Information System (NSMIS) to make available information on the scientific manpower in all possible data forms at a single point so that it can provide answers to manpower related queries covering all the important aspects like characteristics of scientific institutions, inventory of inplant training facilities, enrolment and outturn of science postgraduates, utilisation of scientific manpower, unemployment, etc. Emphasising research in science communication, the Plan paper proposes to involve concerned scientific agencies to support the creation of the facilities for research in science communication and education in the existing academic/research institutions.

Improving Research Facilities

Another important area where the creation of infrastructure is called for relates to the accelerator based research facilities in the academic institutions and universities in collaboration with UGC and Department of Education. It will play a major role in keeping the country in the forefront of modern technology. In this regard, the Plan paper envisages that there is need to pool the technical and financial resources and build national facilities in this area. The Plan paper has also emphasises the need to set up a national committee for defining the priorities and drawing up national plans so that the available funds are most optimally deployed and duplication is avoided.

Regarding the success of the 'Technology Mission' or the 'Mission Mode Project' in the areas of technological significance such as energy, lasers, optics, drugs, etc and societal significance such as female health care, AIDS, education, etc, for harnessing S&T depends to a large extent on the allied infrastructure support. The Plan emphasised setting up of Engineering Research Centres (ERCs) in educational institutions or forward looking research laboratories with respect to each of the technology areas. Such centres may function on a three way partnership basis involving the academia, the industry, the government funded laboratories or agencies. The fundamental aim of such centres would be to bring together engineering and scientific disciplines to address R&D issues, crucial to technology advance from an engineering system prespective

Opportunities for Talented

To attract the talented students to basic science at the early stage of study the Plan paper has categorically emphasised the future career and educational opportunities in S&T fields. The Plan paper has outlined a multi-pronged approach like revival of the National Science Talent Scheme (NSTC), exclusively for science students by the scientific agencies and socio-economic departments Similarly, to attract students more towards science programmes, the Plan outlines introduction of some high quality undergraduate science programmes at the selected institutions in addition to the ongoing programmes to attract the talented students to the science streams, besides, introduction of scholarship schemes for M.Sc. level students and providing support to specialised courses at the universities by science agencies like Department of Atomic Energy, Defence Research & Development Organisation, and department of Science. The Plan paper has emphasised the need for increasing financial support at the doctoral and post doctoral level, revision of recruitment and staffing patterns in scientific industries. The Plan paper also suggests providing opportunities by offering selected posts to the deserving persons in the S&T field which would give preliminary look for preference in opting for science education and career in science

As regards the outturn in higher S&T education, the Plan paper has said that there has been a significant growth in infrastructure for higher education and consequently there has also been a steady increase in the number of graduates, postgraduates and doctorates in science and engineering stream. So, there is need for an indepth assessment to estimate the demand and supply of efficient S&T personnel as well as their training need.

Promoting Science Education

The Industry also can play an active role in the process of promoting S&T education and basic research. There are some good quality research centres run by the industry in some areas like pharmaceuticals. The Plan paper outlines that faculty level, greater intellectual exchange between the industry and the academic institutions would be brought about with possibilities of adjunct appointments, sabbatical programmes, etc.

The Plan paper emphasises that at the national level in high technology programmes, scientific agencies, universities and industry should come together, as in the case of Technology Development Missions. It stresses that the industry should provide/sponsor students with scholarships in special disciplines, co-sponsor research programmes, provide assistance for laboratory work at the postgraduate and doctoral levels etc. These steps would naturally lead to greater synergy between industrial R&D and research activity in academic institutions Applied research should be supported by the industry in a major way, as the industry will be the direct beneficiary of this. In the new economic scenario, the technological levels of many industries in India need significant upgradation. Compared to the developed countries the contribution of Indian industry to the total R&D expenditure, at about 23 per cent, is much less than desired. Therefore, in order to raise the national R&D expenditure to the desired level of 2 per cent of GNP, the industry should be made to come forward in a big way by putting in demands on the existing R&D infrastructure and supporting innovative programmes of technology development and refinement. The inhouse R&D set up should also be suitably strengthened as this will strengthen the competitiveness of the industry.

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DISTANCE EDUCATION

A Social Catalyst for Third World Countries

K. Madhavan*
Manoj Roy*

Introduction

We are in the age of information technology. The new technology has helped us overcome different barriers — space, time etc — to distance teaching. With advanced communication technology, teaching-learning process has become faster and non-conventional. Distance education is the fore-runner in exploiting the potential of information technology so as to reach the learners, teach them, while assuring also its future, especially in the Third World countries. According to Kurian Thomas these countries comprise 49% of the world's land and 51% of the world's population.[1] The underdeveloped countries are plagued with poverty, illiteracy, unemployment, inadequate health care system and social inequalities of all kinds. "Only 52% of the Third World can read and write as compared with 99% in the developed world and about 850 million have no access to schools.[2] Distance education aptly inculcates the slogan 'Education for All', materialising the Upanishadic concept of *'Tamaso ma Jyotirgamaya'* (Lead me from darkness to eternal light). In this write-up we would like to discuss the role of Distance Education in Third World countries.

Distance Education

We know that in conventional education, teaching-learning process is direct and instantaneous. Its main features are (1) time-boundedness, (2) Space-boundedness (3) the presence of teacher, and (4) the presence of students. In Distance Education, the students and teachers do not meet regularly. There are no regular classes and peer group interaction.

Distance Education can be defined and understood in different ways, and the definition given by Otto Peters is more relevant to this case study. "Distance teaching/education (Fernunterricht) is a method of imparting knowledge, skills and attitudes which is rationalised by the application of division of labour and organisational principles as well as by the extensive use of technical media, especially for the purpose of reproducing high quality teaching material which makes it possible to instruct great numbers of students at the same time wherever they live. It is an industrialised form of teaching and learning."[3] Peters has observed three important features of Distance Education. 1. the use of technical media 2. the mass education of students at a distance; and 3. the industrialisation of the teaching process.

The teaching-learning process in Distance Education can be described in a brief manner. In this type of non-formal education, the institution which offers study programmes prepares study materials that are sent to distance learners. Students go through these study materials and assimilate the information provided in them. Generally, the Distance Education institutions organise counselling sessions at Study Centres. A Study Centre is a location where students go for attending counselling sessions and meet their counsellors and peers. Study Centres are established in localities where there is considerable student concentration. The Study Centres also provide library and audio-video materials. Thus we can see that with the help of a network of Study Centres, Distance Education institutions reach vast number of students settled in all corners of a country.

Socio-Academic Scenario

Third World countries are facing innumerable socio-economic and political problems. Most of these countries were colonies for several centuries and their masters had totally destroyed their economy and social equilibrium. Colonial hangover is still there in these countries and most of them are depending on international agencies for financial assistance. Immediately after independence they had to fight the problems precipitated by the colonial rule and cope with population explosion, unemployment, poverty etc. As far as the academic scenario is concerned, there was an ever increasing demand for educational opportunities and conventional classroom education failed to tackle this problem. These countries also realized the potentiality of Correspondence Education and several Correspondence Education Directorates were established within the framework of conventional universities. By 1980, Open Universities were established in several Third World coun-

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tries and thus Distance Education started playing an active role in nation building.

The issue for Third World countries is the risk involved in blindly adopting techniques developed in the West for imparting learning through Distance Education. "The high technology benefits the modern sector rather than the much larger non-modern sector in developing countries and if development is to reach the poor who need it most, an intermediate technology is more appropriate" because "it would be immensely cheaper than the highly sophisticated, highly capital intensive technology of modern industry[4].". Do Third World countries have the infrastructure and standards as available in developed countries, for intergrating advanced technology in Distance Education?

Presently, satellite based educational programmes telecast by Distance Education institutions are mostly watched by urban students, but their counterparts in villages do not have even electricity to operate television sets. The objectives of such approaches become hollow. Moreover, the distance education institutions forget to use radio extensively, a popular medium with 90% coverage in most developing countries, which is freely available, and can be bought with a day's wage. It is a fact that a radio can be operated with two dry cells

Of course, under certain conditions, like high enrolment television and video cassette technology can be cost effective. But, do Third World countries have their telecasts reaching more than 50% of the target learners? Do Third World countries have an environment which is conducive to an efficient and equitable adoption of educational technology?

Some of the Distance Education institutions in the developing countries have also forgotten their social commitments and launch newer programmes which are often duplicates and obviously irrelevant to the needs of those countries.

Action Plan

Distance teaching which aims at democratisation of education should also not insist on learners visiting the Study-Centres/satellite signal receiving centres, located most often far away from their houses so as to supplement the learners' study needs We may aptly say that radio is the right medium — other than the print, for distance teaching in Third World countries even at the fag end of this century. Distance Education institutions in these countries can start various programmes to improve farmers' know-how on different agricultural activities. The best evidence is from the Indian state of Kerala, where All India-Radio's 'Krishi Patham' (lessons for farmers) is a run away success. Thousands of farmers are hooked to this radio programme even when television and cable channels have reached most of the villages of Kerala.

Distance Education institutions can broadcast programmes aiming at social workers, health workers, sex workers, drug addicts, teenagers, industrial employers, adults etc. Programmes of these types will also engage Distance Education institutions in direct nation building along with the established goal of offering certificates, diplomas and degrees.

Open Schools and Universities in developing countries can start educational programme on literacy, family planning, health care, women's development, sex education, pollution control, crime control etc. Distance Education institutions in Third World countries can start programmes on these topics instead of offering stereotyped educational programmes.

Most of the problems faced by Third World countries are due to the curtain of ignorance of the populace. In these countries ignorance takes more toll than diarrhoea, typhoid, cholera and malaria while "population is growing at the rate of 2.4% annually".[5] It is high time that public funded Distance Education in-

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PRINCIPAL

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stitutions be asked to divert their aims and objectives from hackneyed phrases like 'a challenge to classroom teaching, reach education to doorsteps of students, democratising education etc' to the real issues facing the Third World. Executives and policy makers of Open Schools, Open-Universities, Distance/Correspondence Education institutions of Third World countries should shed the notion that Distance Education method can be improved only if western technology and methods are bought or borrowed paying a heavy price.

Pre-marital pregnancy is a big problem in Western countries and with the increasing incidents of AIDS in free sex societies, sex education to teenagers requires more attention. Incidents of pre-marital pregnancies are lesser in developing countries. Unfortunately the teenagers of Third World countries are "entirely without any guidance on sex in contrast with the West".[6] According to Dr. Natiz Sadik, the Western problems would appear here "within a decade" and the present governments are hardly equipped to face such a situation.

Distance teaching institutes can start exclusive sex education programmes for teenagers At present conventional classroom education hardly offers any such programme and this is mostly due to the fact that their objectives do not match with the conservative ideas of a society. Distance Education should take it as a challenge.

Third World countries have a high population of young and old whose physical, personal and intellectual development have come to a halt. The potential of Distance Education for people who are mentally or physically disabled are seldom studied in developing countries. Distance Education should be adopted to suit such situations where independent disabled learners are unable to study in the conventional way. Distance Education can reach the disabled in two ways : 1. Directly teaching the disabled through select Distance Education methods; and 2. Providing instruction to the guardians of the disabled to ultimately lessen the difficulties of the disabled.

The first issue has been widely taken up in the advanced countries. Providing instruction to the most often illiterate parents of a disabled child, is a new task that Distance Education institutions can undertake in Third World countries, for which there is no model to follow.

Conclusion

Distance Education can thus act as a social catalyst in Third World countries to bring forth social changes so as to help improve living standards of people and to inculcate good citizenship among populace and build up healthy and prosperous nations.

Similarly, it can be utilised to provide most relevant information to farmers, social workers, health workers, government officials, politicians so that these categories of people improve their know-how. If it happens there will be a sea change in the socio-economic, educational and health scenario of developing countries.[7]

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6 *The Telegraph Calcutta*, July 20, 1998

7 In several places, we have taken ideas from the Malayalam book on Distance Education (*Vidura Vidyabhasam*) written by K Madhavan Kerala Bhasha Institute, Trivandrum, 1994

Calendar of Events

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary / Officer to be contacted
Nov 14-16 1998	International Conference on Woman and Child	Theme Health, Empowerment, Rights and Development	Pravara Medical Trust, Loni (Dist. Ahmednagar)	Dr N S Mhaske, Organising Secretary, C/o Pravara Medical Trust, Loni-413 736 Dist Ahmednagar (Maharashtra)
Jan 29-31 1999	International Conference on Education	Theme Educational Culture in the 21st Century Knowledge, Teacher & Technology	All India Association for Educational Technology, Deptt. of Education, Govt of Assam	Sh K.M. Baharul Islam, Conference Secretary, Centre for Educational Technology, REC Silchar-788 010 (Assam) India

World Conference on Higher Education

UNESCO recently convened a World Conference on Higher Education at Paris. It was aimed at helping societies in which knowledge and skills have emerged as key factors in the quest for sustainable human development.

Addressing the conference, the French Prime Minister, Mr. Lionel Jospin, called for a revitalisation of the higher education system. Mass higher education had become a fact of life worldwide and the aim must be to provide people with knowledge and skills, he told a large gathering of over 150 Ministers from the UNESCO Member States, experts and educational administrators. Higher education failed when adopting an ivory tower approach and the developing countries needed attention and help, Mr Jospin added. France had a tradition of hosting foreign students and was even now willing to give financial aid to learners from developing nations, provided the latter went back to their native countries, he said.

"We don't deny the importance of English," Mr Jospin said while pointing out that at the same time languages such as French must be also given importance Improving mobility of students with minimum of red-tape ought to be accorded priority. Higher education had been forced to adapt to market economy but the latter was not the "be all and end-all".

Technological evolution and change were also influencing higher education in a startling fashion. Joint research projects would bring benefits to people and society, Mr. Jospin said.

Mr. Federico Mayor, Director General, UNESCO, referred to the preparatory work for over two years for the conference.

India urged UNESCO to plan for increased opportunities for women in education to bring about a true social transformation

'Since education is the main tool for social transformation, education for women at all levels must be one of the issues which mankind has to address with a sense of urgency', Human Resource Development Minister Dr Murli Manohar Joshi told the World Conference

Observing that no system of education could claim to form a whole unless women were given an equal status, Dr. Joshi said the Indian Government had decided to make education for women free upto the undergraduate level, including professional undergraduate courses

He suggested that UNESCO set up a permanent Advisory Council for developing quality of higher education The Council could effectively interact with government and non-governmental agencies, students, teachers, parents and others to realise this objective, he said.

For meeting the objectives of higher education, it was important to develop among the youth abilities to think globally, Dr. Joshi said

Education had to be 'holistically' visualised and not merely as a sum of many of parts with the world soon entering the next millennium, he said.

'Education is what makes a man free', Dr. Joshi said stressing that this could be achieved only when education fused all elements such as physical, cultural, aesthetic and spiritual.

According to the "India country paper", placed at the conference, the contribution of the private sector to higher education had not been encouraging. "In the global wave of privatisation and increasing financial stringency, privatisation of education, establishment of private institutions, in particular, is being proposed".

The paper said the government wanted to encourage private initiatives in higher education but did not desire its commercialisation.

There was also a proposal to levy an educational cess on industries and other organisations which used technical manpower. The education cess was an education specific tax to be levied from those who employed the educated manpower. The basic argument was that those who employed higher educated manpower should be required to share the cost of producing "this highly skilled human capital", the paper added.

Dr Joshi said the paper gave an idea of how India had been able to construct one of the largest systems of higher education in the world and the tasks it envisaged to equip its young people so as to enable them to share their responsibilities both as Indians and as citizens of the world.

Listing the vision and the

tasks ahead, the paper said radical changes were needed to be introduced in the system of examination. The new testing system should facilitate delinking of degrees from jobs and curricular reform bringing in emphasis on multi-disciplinary courses.

The paper noted that the world was entering into an information age and development in communication, information and technology would open up new and cost-effective approaches for improving the reach of higher education to the youth as well as to those who needed continuing education for meeting the demands of explosion of information.

Dr. Joshi said India had excellent facilities for higher education and many students from other countries sought admission to the universities in the country. The craze to go abroad for graduate and postgraduate studies will diminish and a sense of confidence was emerging in the country. He believed that education ought not to be left to market forces and the content of education must be country-specific. Higher education must aim at continuous dialogue between academia and society for mutual improvement, he pointed out

Several developed countries were in search of new models of higher education and mechanisms to ensure continuing education. They had ignored moral and spiritual values and faced problems on this score. Again, they had to contend with serious economic and social issues, he said. On the recent nuclear explosion, Dr. Joshi referred to a Sanskrit saying and said that "only a well defended nation can encourage higher studies The borders must be kept safe and the citizens made to feel secure."

Prof. Georges Haddad, Chairman, UNESCO Advisory Group on Higher Education, said that the current World Conference sent out the message of higher education being at the centre of activities of UNESCO.

Many countries considered higher education as separate from the business of UNESCO and the message became relevant in this context. The main merit of the meet was that it implied real political success, Prof. Haddad said.

There was no absolute model of higher education anywhere in the world and the member States of UNESCO must help each other to improve the system. The mobility of students meant academic mobility in all aspects and this included exchange of professors and researchers also, Prof. Haddad said. Partnerships assumed importance against this background and synergy became indispensable.

The challenge was in terms of excellence and brain drain became a worrying factor only when the best intellects moved to the richest country and in such a case, this movement should be termed 'robbery', Prof. Haddad said. The United States will be confronted with ethical questions in the current scenario and must do some self-evaluation. In fact UNESCO itself must be evaluated rigorously and the member States have a responsibility to get this done, he said. He felt that the developing countries must not be marginalised and the UNESCO's role was to avert disequilibrium.

The Conference arranged an independent session on the issues, prospects, and guidelines for the functioning of the UNESCO Chairs. In all, there are 310 UNESCO Chairs across the globe. Practically all the 310 chairs from the disciplines of social sciences, education, applied sciences, peace and human rights, environment, sustainable development, engineering, technology, communication, culture, philosophy and others participated in this Conference.

About two dozen Chairholders described the activities of their respective Chairs. Dr. B.K. Passi, UNESCO Chairholder in Distance Education for Teachers also made a presentation about the activities of IGNOU-UNESCO Chair meant for the working teachers of India and other SAARC countries. He emphasized upon the need of improving the competence and commitment of teachers belonging to all the faculties and all the levels of education, so as to improve the quality of general and professional education through all the forms of education.

Four watch-words · *quality, pertinence, management and financing*, and *internationalization* in higher education formed the backbone of the Conference. The Conference aimed at (i) broader access to higher education systems based on merit and capacity; (ii) improved management of these systems in terms of relevance and quality; and (iii) stronger links between higher education and challenges posed by increasing unemployment in both developed and developing countries

The UNESCO visualizes five outcomes from this Conference. They are . (i) closer articulation between national policy-making in higher education and national development priorities with due regard for the principle of merit and capacity, (ii) the strengthening of higher education governance and management capacities; (iii) curricula innovation and the promotion of staff development, including action within the framework of UNITWIN/UNESCO Chairs Program; (iv) enhanced co-operation for academic, mobility and the recognition of higher education degrees and diplomas; and (v) the establishment and consolidation of appropriate mechanisms to ensure the link between higher education and the world of work.

Within the theme of preparing for a sustainable future, a few recommendations were made. The key activities of these recommendation are to (i) create a "University Platform for a Sustainable Future" to enhance synergy in knowledge, thought and actions of all organizations in higher education including students and staff prepared to work together, (ii) create an Electronic Network by establishing a major website including electronic discussion lists to facilitate the active exchange of ideas and information as well as to share examples of good practice in university housekeeping, management, education and training, research and knowledge transfer with regard to sustainable human development, (iii) establish "Sustainable Future" award scheme for initiators of excellent, inovative contributions to sustainable human development; (iv) develop an Audit System on a valuntary basis for a Sustainable Future; (v) initiate Feasibility Study to identify the possibility of universities' contribution for sustainable development; (vi) establish a Special Fund for direct mutual transfer of knowledge between teachers and researchers from different countries.

The theme groups discussed many issues related to the concepts and practices of higher education. The issues discussed related to general education, higher education, emerging roles of the teachers, pedagogy of higher education, research in higher education, financing of education, distance education, and the role of UNESCO Chair pertaining to them. They focused specially on : Diploma sickness and merit development; Four pillars of learning : learning to learn, learning to work, learning to be, and learning to live with others; Importance of searching inner space — "Treasure Hidden Within"; Brain-drain, brain-gain and exchange of facilities and ideas; Learning organisation and learning soeicty; University and the word-work of tomorrow; International face of university, physical mobility and virtual mobility; Access to higher education; The basis of higher education, belief based higher education, region based higher education, humanistic based higher education; Academic freedom of the teachers and autonomy of the institution vis-a-vis social accountability; Roles of university and that of meta university; Leadership role of universities in developing primary/basic education; Role of UNU and other universities; Emerging teachers of the future — teacher-speaker, teacher-learner, and teacher-listener; Relationship between the subject pedagogy and nature of learners; Transmission of knowledge, construction of knowledge; Preparation of researchers of higher education; Establishing one research university in each country; Funding — private, state and other sources; On-line and off-line distance education; Conversions of modalities in higher education; Distance education — knowledge transmitter, stimulators of personalized learning; Media — new media and new teachers; and UNITWIN UNESCO Chairs and international cooperation.

The UNESCO Director General, Mr. Federico Mayor, on the concluded day, commended the efforts made by India in making the budget allocation for education go up from 1.9 to 4.1 per cent of the GDP in a span of 10 years. He said India must be congratulated also for its efforts in making 30 per cent reservation for women in all spheres by 2005.

Almost all the countries which took part in the conference had pledged their support to the cause of higher education.

Now the time for action had come and the member States must go ahead with plans for improvement in quality, he added.

Referring to the rapid strides in technology, Mr. Mayor said info ethics and the law of cyberspace counted a lot. Technology ought to be used for the betterment of humankind and not otherwise.

When a Russian journalist raised a question about the higher education system there, Mr. Mayor said the system in Russia was good with competent professors and scientists but the context was not good. He could only say "open the windows" so that education and science could flourish.

To another question, Mr. Mayor said in a lighter vein that 'high tech' alone was not enough but a 'high touch' signifying human touch mattered the most.

There were about 2700 participants in all. The participants included the ministers of education, members of parliaments, secretaries and officials of education departments of various governments, professionals from the universities, professors of higher education, private practitioners of education, entrepreneurs of education, students leaders, personnel from press and journalism, communication professionals and many more.

IT Missions Planned

Dr. N. Seshagiri, Special Secretary in the Planning Commission and Director-General of the National Informatics Centre said that a large number of Information Technology (IT) missions were to be set up, which could get a total funding of Rs. 7,000 crores. Dr. Seshagiri is also the member-convenor of the National Task Force on Information Technology.

It was estimated that India was capable of hardware exports worth $10 billions a year, said Dr Seshagiri in his CSIR foundation day lecture at the National Aerospace Laboratories in Bangalore recently.

To develop the hardware industry, about Rs. 3,000 crores would be set apart for mega-fabs and mini-fabs to make integrated circuits of various kinds. Regional engineering colleges and other institutions could get Rs. 300 crores to upgrade their computer facilities

Dr. Seshagiri's speech dwelt at length on the role being played by the National Task Force on Information Technology in achieving the goal of making India an IT superpower in 10 years.

An Inter-University Network (IUNet), with a super high-speed 2.5-10 GBPS (giga bits per second) links, is to be set up in eight months, connecting the Indian Institute of Science, Bangalore with the IITs in Chennai, Mumbai, the University of Pune and the Institute of Information Technology in Hyderabad. The IUNet had been suggested by Dr. Raj Reddy of Carnegie Mellon University and Dr. V.S. Arunachalam, former Scientific Advisor to the Defence Minister, who too was now at the university, said Dr. Seshagiri.

At 2.5 GBPS, the IUNet would carry 1,000 times more information than the NIC's current 2 MBPS (mega bits per second) links which was capable of transmitting 1,00,000 pages of text in one hour.

Dr. Seshagiri drew attention to the speedy implementation of the recommendations contained in the Task Froce's first report and the impact it would have. Its second report was before the Government and the next report could be ready in two to three months.

The Task Force's suggestion to permit IT units to import materials through a self-declaration procedure had drawn considerable interest. Instead of a customs check before the material was brought in, there would be an audit afterwards with heavy penalties for false declarations. As a result, there had even been enquiries from foreign companies about moving their $200 million plants from South-East Asia to India The concern of these companies was whether such a policy could be adhered to for at least seven years, said Dr. Seshagiri.

The Department of Telecommunications (DoT) prohibition on interconnecting networks was being removed. At present, networks run by Government organisations could be interconnected In another month or so, a policy would be worked out which permitted private networks to do the same.

Implementation of the Wired Village Project in some 120 villages in the Waranagar area of Maharashtra, where not only Internet and Intranet access but also electronic data interchange facilities were being provided, had clearly demonstrated that people in rural areas were able to use such technology to their advantage. In addition, it had also provided impetus for creating material of local relevance.

India began laying a fibre optic network only after some African countries did so because DoT did not believe that fibre optics was important. Once competition had been introduced, DoT had laid 75,000 km of fibre optic lines in two and a half years. But even this rate was inadequate and it had been decided that other organisations, such as the Railways and electricity boards, could establish fibre optic networks and lease services to the public.

Likewise, the VSNL's monopoly on Internet services would be ended. Other Internet service providers could also establish their own gateways for international links, without going through the VSNL. Such competition would bring down the cost of Internet access, said Dr. Seshagiri. The VSNL was paying twice what the NIC had to pay for its external Intenet gateway. Even with a 30 per cent mark-up, the NIC was in a position to offer Internet accounts for Rs. 2,750 a year, he said.

S&T and Social Needs

Prof V.S. Ramamurthy, Secretary, Department of Science and Technology, called upon scientists to undertake researches to meet the 'social requirements' of the country. He was delivering a lecture on the 'R and D Promotion in the 21st Century,' at the CSIR Foundation Day celebrations, organised by Central Electrochemical Research Institute (CECRI) in Karaikudi recently He stressed the need to assess the social requirements of the country through people-friendly technologies. He said the country could pride itself on having formed a reasonably strong base of science and technology. "The base has grown to such a level that we can now face the future very confidently" he said

But the common man should

be provided with safe drinking water, motorable roads and uninterrupted power supply. A country, which could make satellites, missiles and tanks, was not able to guarantee safe drinking water to its citizens. Prof. Ramamurthy wanted to find where the R and D had faltered in this particular field of social responsibility. He said the research findings in the cells of laboratory must reach the common man. He asked the scientific community to identify the knowledge that could help the common man mitigate his problems. A viable programme had to be evolved with the co-ordination of scientists, decision-makers and other socially conscious people to assess the people's requirements. The R and D should not always be a market-driven force. The social requirements should also become the integral part of the science and technology.

Dr. M. Raghavan, Director, CECRI, in his presidential address, explained the achievements of CSIR in the nation-building exercise in the past five decades He also spoke about the constructive role of the CECRI, Karaikudi in the field of science and technology

TQM in Lib & Inf Services

The Indian Institute of Management, Lucknow recently organised a Management Development Programme on Total Quality Management in Library & Information Services. 16 senior level Librarians and Information Managers (LIMs) from all over the country attended the programme.

The programme was designed to equip the participants with adequate knowhow so that they are able to (i) gauge the requirements of their clients, i.e. the library users, more accurately and precisely, (ii) cater to the exact needs of such users; and (iii) remain cost effective in every area of operation by doing things right the first time, every time, all the time.

The training package developed by Prof. S. Chakraborty and Dr. Roshan Raina, Programme Directors, had been designed around the following themes : (i) Developing total quality management (TQM) as a strategic focus to effect continuous improvement in various activities and services of a modern library and information centre (LIC) encompassing acquisition, organisation and dissemination of information; (ii) Understanding the TQM process; (iii) Barriers to continuous improvement in the context of library and information services (LIS); and (iv) Making continuous improvement a way of life for everyone involved in LIS in any organization.

The topics discussed in the technical sessions included (i) Conceptual Framework of TQM; (ii) TQM in Library & Information Context (LIC), (iii) Service Design Process (SDP); (iv) SDP in LIC; and (v) Managing Service Delivery.

Participants provided the feedback on the programme, through a structured questionnaire designed for the purpose as well as through some brief inputs presented in the valedictory function

MBA in Banking & Finance

The Indira Gandhi National Open University (IGNOU) proposes to launch, in collaboration with the Indian Institute of Bankers (IIB), Mumbai, an MBA Programme in Banking and Financial services in the coming academic session. The programme is specifically targeted at the working executives in the banking sector.

A MoU to this effect was signed between IGNOU and IIB by the Vice-Chancellor, IGNOU, Prof. Abdul W. Khan and the RBI Governor, Dr. Bimal Jalan, who is the President of IIB, in Mumbai recently. To support the programme development effort, IIB will institute a chair for Professor's position in the Banking and Financial services area at IGNOU. This will be the first chair from within the country to be instituted at IGNOU. With the MBA, Banking and Financial services programme, IGNOU will make foray into sector-specific programmes which has been a long-felt need. The programme shall be available to all members of the IIB, who have passed CAIIB Part-I and Part-II examination.

The programme is expected to attract large enrolment from the banking sector, as it is the only programme in the country, specifically designed for the banking sector

The IGNOU has also been approached by other sectors like transport and hospitality industry to develop programmes through collaborative partnerships.

Symposium on Status of Women

Dr. (Sow) I.B P. Mahila Kala Mahavidyalaya, Aurangabad proposes to organise a National Level Symposium on Woman — After Independence : Status and Image on 11-12 November, 1998.

The symposium will explore the status of woman at social, economical, political, legal, historical, psychological and literary level to judge her gained dynamism and to explore the ways for empowerment.

The papers proposed to be presented include (1) Socio-Eco — Change in marital status of woman and her role in family; and

Working women in organisational and non organisational sector. (2) Political, Legal, Historical — Women's role in Nation Building; Laws in Independent India beneficial to women?; and Comparative study of women's status : Pre Independence and post Independence period. (3) Psycho-Home — Mental Health of Second gender; and Nutritional Status of second gender and children. (4) Women as projected from literature : 1947-1998.

Further details may be obtained from Dr. Mrs. Manorama B. Sharma, Principal, I.B.P Mahila Kala Mahavidyalaya, Aurangabad-431 001.

International Conference on Woman and Child

An International Conference on Woman and Child — Health, Empowerment Rights and Development will be held on 14-16 November, 1998 at Rural Medical College, Loni, Distt. Ahmednagar, Maharashtra.

The objectives of the Conference are (1) to promote a dialogue regarding various problems related to health, empowerment, rights and development of women and children in the world, especially in developing countries, (2) to identify possible solutions for these problems, (3) to commit participants to take action in their area of interest; and (4) to make recommendations for action to international and national policy makers, scientific and academic institutions and other concerned agencies.

The issues proposed to be debated include Role of government and NGOs, Role of policy & law makers, Role of service providers — health workers, law keepers, social activists, etc., Alternative approaches in health care and social security systems, Appropriate training of health workers in woman and child health, and Use of appropriate medical technology. The Subthemes include, Gender Issues, Social Issues, Women's Health and Nutrition, Violence and Crime Against Women, Women and Development, Child Rights, Crime/Violence against children; Child Health and Nutrition and Child and Development.

Further details may be had from Dr. N.S. Mhaske, Organizing Secretary, International Conference on Woman & Child C/o Pravara Medical Trust, Loni-413736, Dist. Ahmednagar, Maharasthra, India. Phone : 0091-2422-73600, 73486 Fax· 0091-2422-73413/73442 Email: Pravara@bom 3.vsnl.net.in Website: http.//www.pravara.com/

ICMR Grant-in-aid

The Indian Council of Medical Research provides partial financial assistance for organising Seminars/Symposia/Workshops. Applications for grant of financial assistance (complete in all respects in the prescribed proforma), will be considered only if furnished at least four months before the date of commencement of the Seminar/Symposium/Workshop, etc

Further details may be obtained from the office of the Director General, ICMR, Ansari Nagar, New Delhi-110029.

World Peace Day

Gujarat Vidyapith Peace Research Centre in the Jamnalal Bajaj Institute of Studies in quest of Non-violence celebrated "World Peace Day". Shri Govindbhai Raval, Vice-Chancellor presided while Prof Ramlalbhai Parikh, Chancellor was the Chief Guest. Prof. D.N. Pathak, Visiting Professor of the Peace Research Centre, in his address, said that Nuclear disarmament was essential and each person of the world should get bread, clothes, house, education and facilities for health. If these basic needs were fulfilled the development would be possible and peace would be established. To maintain peace, political order of decentralised development should be established. The perspective of Gandhian Thought should be accepted to establish permanent peace.

Prof Ramlal Parikh, has been conferred World Peace Day Award by Dr. Young Seek Choue, President of International Association of University presidents & Chancellor, Kyung Hee University System, Seoul, (South Korea). The Peace Research Centre of the Gujarat Vidyapith has bilateral arrangement with Graduate Institute of Peace Studies of Kyung Hee University.

Prof Parikh, the Chancellor of the Gujarat Vidyapith has written to the U.N. Secretary General welcoming U.N. Declaration of year 2000 A.D., the first year of 21st Century as a year of Culture of Peace. Prof Parikh has pleaded with U N to modify this Declaration and declare 2000 A.D. as a year of Culture of Peace and Non-violence, as according to him Peace and non-violance were inseparable Prof. Parikh stressed the need of incorporating Gandhian Concept of non-violent society as a global phenomenon and non-violence as a way of life.

Shri Govindbhai Raval, Vice-Chancellor, talked about the book "Peace Pilgrim". He said that one's eternal peace was essential for family and society and to create peaceful atmosphere.

News from Agricultural Universities

Test Tube Sunflower Plants

The scientists of CCS Haryana Agricultural University have successfully raised sunflower plants in test tubes. These miniature plants developed from small fragments of seedlings not only grew well but had been made to bloom and develop seeds in the test tube itself.

Prof. J.B. Chowdhury, Vice-Chancellor, said that the greatest advantage of this scientific achievement would be to raise a number of generations of this plant for a breeding programme as the life cycle of the plant could be reduced from 50 to 75 per cent.

He said that this experimental strategy of reducing the life span of the plant to produce short duration sunflower crop will also go a long way in understanding the mechanism of flowering and to achieve early flowering to protect the crop from drought and other adverse climatic conditions.

Prof. T.M. Verghese who alongwith Dr. Anisha Gupta, made this rare achievement while investigating the possibility of raising hybrid plants of sunflower through micropropagation technique, said that roots had no role to play in the test tube flowering of the plant. However, it was at their will to produce roots after flowering or induce flowering after the production of roots simply by modifying the type and quality of the growth regulator. Also, it was possible for them to monitor the life cycle and life processes of the plant closely in the test tube. He said that his team had also devised a method for postponing flowering in sunflower plants. He interpreted that in all possibility, the genes responsible for flowering were triggered to activity under the influence of growth regulators in a controlled environment, thus enhancing enzymatic activity and protein synthesis essential for flowering process.

Prof. Verghese, who has been providing leadership to students and fellow scientists in raising a variety of plants of economic importance using bio-technological methods for over past two decades, claimed that the technology employed here would also be of great benefit for the fundamental research in plant physiology, plant breeding as well as in biotechnology.

News from UGC

Countrywide Classroom Programme

Between 1st and 7th November, 1998 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programmes are telecast on the Doordarshan's National Network from 7.15 to 8.00 a.m. every day except on Saturdays & Sundays. These programmes are also telecast on Doordarshan's National Network from 6.00 to 7.00 a.m. two days a week i.e. on Saturdays and Sundays. On DD2 International Programme will be shown at 11.00 to 12.00 hours on Saturdays only.

Hindi Programmes are being telecast on Mondays to Fridays from 6.00 to 6.30 a.m.

1.11.98

"Odissi : The Art of Expression-2 Abhinaya"
"Form & Idea-1"
"Rambrandt"

2.11.98

"Copper Extraction"
"Manufacture of Newsprint"

3.11.98

"Industry and Environment : A Peaceful Co-existence"
"Coleridge's Lament"

4.11.98

"Estimating Predator & Prey Population"
"Modern Brain Surgery"

5.11.98

"Question time-86"
"Growing Buds, Smiling Petals"

6.11.98

"Simply on Symphony"
"Jogini"

7.11.98

"Indian Women : From Rhetoric to Reality — Women & Health-3"
"How do We Speak?-2"
"Drip Irrigation"

Hindi Telecast

प्रात: 6.00 से 6.30 बजे तक

2.11.98

"संगीत गणित — भाग-3"

3.11.98

"शास्त्रीय संगीत के विभिन्न अंग-संतूर के संग : आलाप"
"ए डैलीकेट बैलेंस"

4.11.98

"शास्त्रीय संगीत के विभिन्न अंग-संतूर के संग : जोड़ एवं झाला"
"पंचायत राज : विकेन्द्रीकरण के नवीन

आयाम : भाग-1"

5.11.98

"शास्त्रीय संगीत के विभिन्न अंग-संतूर के संग : बंदिश"

"पश्चिमी राजस्थान की दरियां"

6.11.98

"बांसुरी — भाग-2"

"अनार"

Awards and Medals

Bhatnagar Awards 1998

The CSIR has announced this year's winners of the prestigious Shanti Swarup Bhatnagar awards in different scientific disciplines.

While the award for the medical sciences goes to Dr. G. Balakrishnan Nair of the National Institute of Cholera and Enteric Diseases, Calcutta, that for earth, atmosphere, ocean and planetary sciences has been bagged by Dr. Rengaswamy Ramesh of the Physical Research laboratory, Ahmedabad.

For biological sciences, the awards are to be shared by Dr. Debi Prasad Sarkar of the University of Delhi's South Campus and Dr. K. Vijay Raghavan of National Centre for Biological Sciences, TIFR Centre Bangalore; and for the chemical sciences by Dr. Akhil Ranjan Chakravarathy of Indian Institute of Science, Bangalore and Dr. K.N. Ganesh of the National Chemical Laboratory, Pune.

The award winners in the area of engineering sciences are : Dr. Ashok Jhunjhunwala of IIT, Chennai and and Dr. Anurag Sharma of IIT, Delhi; physical sciences : Dr. Sumit Ranjan Das of TIFR, Mumbai and Dr. Arun M. Jayanavar of Institute of Physics, Bhubaneswar; and mathematical sciences : Dr. Subhashish Nag of Institute of Mathematical Sciences, Chennai, and Dr. T.R. Ramdas of TIFR, Mumbai.

The names of the award winners were announced by the Director General of CSIR, Dr. R.A. Mashelkar, at a function held in New Delhi to mark the foundation day of CSIR.

The function also marked the presentation of CSIR's prestigious technology awards and young scientists awards by the Science and Technology Minister, Dr. Murli Manohar Joshi.

Also announced was 'special technology award' over and above the various trophies and shields that are presented every year in recognition of excellence in in-house multi-disciplinary team efforts and external interaction for technology development, transfer, marketing and commercialisation.

The 'special technology award' was presented to the Central Leather Research Institute, Chennai and National Environmental Engineering Institute, Nagpur, on the recommendations of the award commitee in recognition of their signal contribution to the Indian leather tannery industry.

The award has been given to them for providing critical and integrated technological solutions to tanneries in Tamil Nadu, that were closed due to non-conformance with environmental norms.

The timely S&T intervention rendered through the auspices of All India Skin and Hide Tanners and Merchants Association had helped in the recommissioning of the tanneries thereby averting unemployment for a vulnerable section of society and loss of substantial foreign exchange earnings through exports.

The other technology award winners are : Central Institute of Medicinal and Aromatic Plant, Lucknow and Central Drug Research Institute, Lucknow, (the shield for process technology); Indian Institute of Petroleum, Dehradun, and Engineers India Limited, Delhi (prize for chemical technology); and Central Mining Research Institute, Dhanbad, and South Eastern Coalfields, Bilaspur (prize for engineering technology).

The young scientist awards, in turn, have been won by Dr. S. Kannan and Dr. Senguodagounder Muthusamy of Central Salt and Marine Chemicals Research Institute, Bhavnagar (chemical sciences), Dr. Kalachand Sain of the National Geophysical Research Institute, Hyderabad (earth, atmosphere, ocean and planetary sciences), and Dr. Arvind Sinha of National Metallurgical Laboratory, Jamshedpur.

AEB Awards-1997

The 19th Annual Session of The Academy of Environmental Biology (AEB) is proposed to be held at Bareilly (Uttar Pradesh) from November 14-16, 1998. On this occasion a Symposium and BRPM Competition on "Biomonitoring & Ecoconser-vation" and Theme Discussion on "Role of NGOs in Rural Uplift" are also planned. The objectives of the Session are to review and analyse the situations and to provide the scientists and members of AEB a forum for exchange of information and updating their current knowledge of Environment & Toxicology. Further details may be had from Dr. D.K. Jain, Org. Sec, 19th AEB Annual Session, Head, Dept.

of Zoology, Bareilly College, Bareilly-243 605.

The Academy has also announced the following awards for 1997.

Dr. P.K. Seth, Director, Industrial Toxicology Research Centre (ITRC), Lucknow (U.P.) shall be conferred upon with Academy's highest Scholarly Prestigious International Award "AEB Honours". The Award carries a Gold-Plated Medal and a Citation.

Dr. H.V. Bhatt, Deputy Director, National Institute of Occupational Health, Ahemedabad has been selected for Archana Medal-1997. Dr. N. Somasekhar, Scientist, Nematology Section, Sugarcane Breeding Institute, Coimbatore has been chosen for "Smt. Snehlata Banerjee Medal-1997" for his Research paper published in Proc. Acad. Environ. Biol., 7(1), 31-38 (1998). They will be presented a Gold-plated Medal and a Citation each.

Ms. V. Sujatha, Research Scholar, Deptt. of Toxicology, Fredrick Institute of Plant Protection & Toxicology, Padappi has won 9th BRP Medal-1997. Gold-plated Medal and the Certificate will be awarded to her.

Ms. Varsha Gaumat, Environment Biology Lab., Zoology Department, Rajasthan University, Jaipur, Ms. Malathi Srinivasan, Deptt. of Life Sciences, Avinashilingam Deemed University, Coimbatore, Mr. A.K. Anand Kumar, Algal Research Unit, Deptt. of Biosciences, Barakatullah University, Bhopal, Mr. N.K. Yadav, Deptt. of Zoology, CCS Haryana Agricultural University, Hisar, Mr. V. Vasudev, Deptt of Studies in Zoology, University of Mysore, Mansagangotri, Mysore have been recommended for the BPA Certificate-1997.

Indira Gandhi National Open University

Schedule of Telecast for the period 1st Nov. to 30th Nov., 1998
6.30 a.m. to 7.00 a.m.

Day/Date	Academic Prog.	Title
2.11.98 Monday	Bachelor's Degree Programme	Let's Apply Differential Equation
3.11.98 Tuesday	Bachelor's Degree Programme	Communalism
4.11.98 Wednesday	Diploma & Certificate Course	Yeh Jungle Hamare Hain
5.11.98 Thursday	Diploma & Certificate Course	Rural Health Service
6.11.98 Friday	Management	Understanding Financial Statement Pt.II
9.1198 Monday	Bachelor's Degree Programme	Avkal Samikarno Evam Unke Prayog
10.11.98 Tuesday	Bachelor's Degree Programme	Religious Symbols
11.11.98 Wednesday	Diploma & Certificate Course	Rural Women and Development
12.11.98 Thursday	Diploma & Certificate Course	Gramin Mahilayen aur Vikas
13.11 98 Friday	Management	Sales Display
16.11.98 Monday	Bachelor's Degree Programme	Urban Labourers
17.11.98 Tuesday	Bachelor's Degree Programme	Shahri Mazdoor
18.11.98 Wednesday	Diploma & Certificate Course	Bhojan ke bare mein Galat Jankari
19.11.98 Thursday	Diploma & Certificate Course	Kabiley
20.11.98 Friday	Management	HRD Practices in Select Organisations
23.11.98 Monday	Bachelor's Degree Programme	The Making of a Sociologist
24.11.98 Tuesday	Bachelor's Degree Programme	Social Stratification in India : An Interview with Andre Beteille
25.11.98 Wednesday	Diploma & Certificate Course	People amids Natural Surroundings
26.11.98 Thursday	Diploma & Certificate Course	Kuposhan ke Prabhav
27.11.98 Friday	Management	HRD-Business Environment
30.11 98 Monday	Bachelor's Degree Programme	Water Pollution

BOOK REVIEW

A Landmark in Teacher Education

A.N. Maheshwari*

National Council for Teacher Education. Curriculum Framework for Quality Teacher Education. New Delhi, NCTE, 1998. Pp. xiii+137. Price Not Stated.

The National Council for Teacher Education (NCTE) was established as a statutory body in 1995. The curriculum framework developed by the NCTE and released in 1998 is expected to function as a catalytic input in revamping teacher education by restructuring its curriculum. The task has come to the NCTE fifty years too late. Had an all out effort been made to indigenise education soon after the country became independent, the lagacy of colonial education could have been easily replaced by an education system relevant to the new nation. But the pre-independence model of education, in spite of interventions of several education commissions, seems to have continued practically undiluted at all levels of education and the system has expanded by several folds. Consequently a task that was relatively easy when the educational system was a fraction of its present size has assumed colossal proportions. There are now 5.98 lakh primary schools, 1.76 lakh elementary schools and 98 thousand high/ higher secondary schools in the country. About 1300 elementary teacher education institutions and about 700 colleges of education/ university departments of education perform the primary responsibility of pre-service education of teachers.

School teaching is the single largest professional activity in the country. There are 4.52 million teachers in the country out of whom nearly 3 million teach in primary/elementary schools. Because of its size the teaching community has acquired high inertia. They resist change and prefer *status quo*. Now only some innovative ideas may be able to overcome the inertia of the system.

The NCTE has chosen a pragmatic approach for influencing the teacher education system. It has developed a curriculum framework instead of fixing curricula for different categories of teacher education programmes. The expectation of the NCTE is that by offering flexible suggestions the organisations and institutions responsible for deciding teacher education curriculum may be able to select from the curriculum framework what would meet their specific needs within the constraints of their resources. Accordingly, the NCTE has prepared the curriculum framework keeping in mind the diversity of the school system and those of the teacher education institutions that train teachers for it. It has evolved a curriculum framework through the process of intensive national level consultations with teachers, teacher educators and thinkers in education. In the book under review curriculum frameworks for designing teacher education courses for the different stages of education begining from early childhood stage to the senior secondary stage have been separately given.

The phrases such as teacher education for building a learning society, for developing the ability of learning to learn, and for developing competencies required for using information and communication technology in teaching-learning, which are some of the new ideas in the framework, may remain as mere rhetoric unless they get appropriately reflected both in letter and spirit in the new teacher education programmes. Therefore, the teacher education will become futuristic and dynamic only when the existing programmes can be changed as per the NCTE's vision. The new type of teacher, who would be forward-looking, who would be able to adapt appropriate pedagogy, who would be able to prepare suitable instructional materials to suit the needs of the teaching-learning and who would be able to carry out the other tasks envisaged for him/ her, the NCTE hopes, will be produced when courses of theory, practice teaching and practical work in the teacher education programmes are restructured as per the framework.

The NCTE has recognised that the characteristics of learn-

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ers of the senior secondary stage, the level of subject disciplines studied at this stage and the academic qualifications of the prospective teachers for teaching at this stage make it imperative that the pre-service course for preparing senior secondary school teachers may have to be different from the conventional B.Ed. course. Another important recommendation is that the duration of the present B.Ed. programme may be increased from one year to two years, and wherever feasible the B.Ed. model of teacher education may be replaced by long duration integrated courses. The NCERT's four-year B.A.Ed. and B.Sc.Ed. courses combine content and professional education. These courses are models of integrated teacher education that have withstood the test of time.

The concluding chapter of the book entitled 'Managing the System' leaves a disquieting feeling that these recommendations are likely to remain unimplemented for some time. The NCTE has not fixed the time frame for replacing the existing courses by designing new courses as per the curriculum framework. Also, a major challenge in introducing the teacher education programmes envisaged by the NCTE will be in making available teacher educators who can teach the new courses. The weakest link in implementing the new scheme may turn out to be the teacher educators as they generally possess limited professional competencies.

The teacher education has to be tuned to the tasks that teachers perform when they join the profession. Therefore, the teacher education has to be intimately matched with the school curriculum. But the teacher educators themselves do not have the experience of school teaching. They teach to pupil-teachers mainly the theoretical courses and seldom try to equip the would be teachers with skills essential for dealing with real issues of school teaching such as strategies for handling large classes, coping with multi-grade and multi-level teaching etc. The NCTE has therefore suggested that appropriate M.Ed. courses be designed for preparing stage specific teacher educators.

Over and above what has been said, major impediment in reforming teacher education will be the financial interests of the organisations that run teacher education courses. Many of these institutions earn revenue from their teacher education courses. This is done be adopting shortcuts such as offering their programme with poor infrastructure, by enrolling more students than what the system can handle and even by offering teacher education by distance mode. The tasks before the NCTE are, therefore, daunting, to say the least. The curriculum framework for quality teacher education prepared by the NCTE is one of the crucial inputs for indigenising teaching profession and for its adaptation within the constraints in which the schools function in the country.

It has been acknowledged in the book that for the implementation of its recommendations a favourable climate will have to be created first. It is hoped that before long the NCTE will organise regional seminars and meetings of teachers, teacher educators and administrative functionaries for working out the follow up tasks so that the curriculum framework for teacher education could be put into actual practice. To sum up this book is a landmark in teacher education and should be studied by both experts and lay public interested in school education.

ANJUMAN ENGINEERING COLLEGE (FOR MEN)
BHATKAL
(Affiliated to Vishveswariah Technological University & recognised by AICTE)

REQUIRES

PROFESSORS
Experience : 10 Years Age : 50 Years and below
Qualification . Ph.D with First class Masters Degree in related branch of Engineering

ASSISTANT PROFESSORS IN
(I) Mechanical (II) Electronics and Communication
(III) Computer Science and Engineering.
Experience : 5 years in Teaching / Research / Industry
Age : 45 years and below
Candidates will be eligible for AICTE pay scale, with Karnataka Government Dearness Allowance.
Well qualified and experienced retired personnel may also apply.

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All candidates must apply to the undersigned, with a passport size photo and copies of testimonials of education and experience.

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General Secretary
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COMMUNICATION

Management Education in Bihar

This is with reference to the T.N. Chaudhary's article "Management Education in Bihar" (*University News*, August 31). The 14 institutions listed in the article had been taken from the AICTE's *Directory of Approved Management and MCA Programmes* (as on December 31, 1995).

Of the 14 institutions, nine offer MBA degree courses, while the remaining five award its equivalent — P.G. Diploma courses. My observations relate to the MBA programmes offered by nine institutions. According to the AICTE data, the nine institutions have 1015 seats (including 275 for part time courses). However, AIU's *Handbook of Management Education* (1998) lists only five : (1) L.N. Mishra College of Business Management (a constituent college of Babasaheb Bhimrao Ambedkar Bihar University), (2) Birla Institute of Technology (a deemed university), (3) Indian School of Mines (a deemed university), (4) L.N. Mithila University (Darbhanga), and (5) L.N. Mishra Institute of Economic Development and Change (a constituent college of Magadh University). In addition, the *Handbook* lists Patna University (Department of Applied Economic and Commerce). The MBA course offered by the University is not recognised by the AICTE, if one goes by its *Directory* (the author also says so).

The status of the courses offered by the remaining four institutions viz; (1) IMAM College of Business and Science Management (Bahera, Darbhanga), (2) SNS Institute of Management (Ranchi), (3) Institute of Business Management (Darbhanga), and Gaya College, is not clear. Of these, two institutions — IMAM College of Business Management and Science, and SNS Institute of Management — do not figure in the AIU's *Universities Handbook* (27th edition, December 1997). They should have been affiliated to L.N. Mithila University and Ranchi University, respectively. Further, according to the *Universities Handbook*, Ranchi University does not even offer MBA course! The above *Handbook* includes the Institute of Business Management in the list of colleges affiliated to the L.N. Mithila University, indicating that it offers MBA programme. The name of the director is shown as Prof. S. Akram. His name also appears as the director of MBA programme of the L.N. Mithila University in the *Handbook of Management*. The *Employment News* (12-18 September) carried an admission notification of the University under his signatures. It is not clear whether there are two courses — one offered by the University Department of Commerce and Business Administration and the other by the Institute of Business Management. As regards Gaya College, a constituent college of Magadh University, the *Universities Handbook* does not include MBA as one of the course offerings.

In the context of the above discussions one wonders what is the actual number of seats for MBA courses in Bihar? If we accept (I am inclined to do so) that the *Handbook of Management Education* reflects the actual position, the number of seats is 610 (460 full time and 150 part time courses), including 60 seats available at Patna University, as against the AICTE's figure — 1015.

Apart from the institutions referred to above, of late, I have come across advertisements in newspapers issued in the name of the Faculty of Management Studies, B.N. Mandal University, (Madhepura) claiming that it offers three courses : (1) Master of Human Resource Development, (2) Master of International Business Management, and (3) Master of Finance and Control. According to the advertisement, Ascent Educational Society, a Delhi-based outfit provides the course through correspondence, and the examinations are conducted by the University. Who can throw light on these courses? Finally, I would like to make some observations on two comments of the author :

(1) The author stated that Vaishali Institute of Business and Rural Management, which claims affiliation with Babasaheb Bhimrao Ambedkar University, is not recognised by the AICTE. The name also does not appear in the two AIU publications. However, the author, who is a Professor of Management of the University should have stated whether the claim of the Institute is valid or not.

(2) The author had said that "a silver jubilee constituent college in North Bihar has been running without a Director in contravention of AICTE norms." Why did he not name the college? I presume, he is referring to the L.N. Mishra College of Business Management (1973), a constituent college of the Univesity where he teaches management. However, both the AIU publications mention Dr. Jagannath Mishra as its Director.

The management education scene is quite chaotic. Unbridled proliferation of institututions, more often than not under political pressure, offering a wide variety of management courses and misleading advertisements in newspapers by fly-by-night operators add to the chaos. It is high time that the AICTE creates a computerised data base to enable it to provide up-to-date information about institutions and courses which statutorily come under its scope. Its publications like Directory of Approved Management and MCA Programmes and All India Directory of AICTE Approved Institutions (a misleading title, because it lists only institutions offering pharmacy and engineering and technology courses) become hopelessly out-of-date no sooner than they are published.

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THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

AGRICULTURAL AND VETERINARY SCIENCES

Agricultural Chemistry and Soil Science

1. Thawale, Prashant Ramchandra. **Studies on changes in physico chemical properties of soils and growth response of crops grown with pulp and paper mill waste water in lysimeters.** (Dr R B Puranik), Department of Agricultural Chemistry and Soil Science, Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

Animal Husbandry and Dairying

1. Waghulde, Gopal Khushalrao **Production and storage of carbonated curd (yoghurt) and fruit yoghurt at ambient temperature in different containers.** (Dr S P Pande), Department of Animal Husbandry and Dairying, Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

Animal Nutrition

1. Deshmukh, Avinash Dinkarrao. **Effect of magnetised feed and water on performance of broilers.** (Dr B S Thakur), Department of Animal Nutrition, Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

Horticulture

1 Gawaji, Kadam Keshav. **Genetical studies in watermelon (citrullus lanatus (Thunb.) Mansf.).** (Dr K U Sanghavi), Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri.

Sericulture

1. Pushpa Rani, P **Effect of selected vertebrate hormones on the growth and physiology of silkworm, poroxey mori L.** (Dr D Bharathi), Department of Sericulture, Sri Padmavati Mahila Visvavidyalayam, Tirupati

Silviculture and Agroforestry

1. Rao, Gandhe Rajeswar. **Studies on dynamics of herbage layer in pine and khair based natural silvipastoral systems in North West Himalaya.** (Dr V K Mishra), Department of Silviculture and Agroforestry, Dr Yashwant Singh Parmar University of Horticulture and Forestry, Solan

Veterinary Physiology

1. Jagtap, Dinesh Girdharrao. **Impact of environmental stresses and effect of managerial practices for their amelioration on growth production of broiler chicken.** (Dr P A Chorey), Department of Veterinary Physiology, Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

Wildlife Science

1 Satish Kumar. **Ecology and behaviour of Indian grey wolf (canislapus pallipes sykes, 1831) in the Deccan grasslands of Solapur, Maharashtra.** (Dr Asad R Rahmani), Department of Wildlife Science, Aligarh Muslim University, Aligarh.

BIOLOGICAL SCIENCES

Biology

1. Rao, J Visweswara. **Taxonomic studies on the fishes of the family sciaenidae of Visakhapatnam coast.** (Dr A Shameem), Department of Biology, Andhra University, Waltair.

Botany

1. Deshpande, Shubhada Ramdas. **Tissue culture studies with selected tree species of Gujarat.** (Dr G Prathpasenan), Department of Botany, The Maharaja Sayajirao University of Baroda.

2. Dominic T K. **Isolation and characterisation of the non symbiotic cyanobacterian of the paddy fields of Kerala.** (Dr P V Madhusoodanan), Department of Botany, University of Calicut, Calicut.

3 Mohanan, K V **Genetical and certain allied studies on in vion cloning in rice oryza sativa L.** (Dr K Pavithran), Department of Botany, University of Calicut, Calicut

4 P, Uma. **Incidence of aflatoxins in food and feed commodities in North Karnataka region — A critical study.** (Dr C Narayan Reddy), Department of Botany, Gulbarga University, Gulbarga.

5 Sahay, Rajiv Ranjan. **Survey and analysis of some suspected air borne bioallergens.** (Prof K B Mishra), Department of Botany, Magadh University, Bodh Gaya

6 Sekhar, P Chandra **Ecological studies in the river Krishna near Gadwal, Mahaboobnagar Dist (Andhra Paradesh) with reference to water quality.** (Dr P Manikyareddy), Department of Botany, Osmania University, Hyderabad.

7 Venkatagiri, Shripathi. **Growth regulator: Induced changes in physicochemical properties of lipids in plants.** (Dr S Sivakumarswamy), Department of Botany, Karnatak University, Dharwad.

Life Sciences

1. Chaudhari, Bhushan Liladhar **Studies on siderophores of curvularia lunata NCIM 716.** (Dr S B Chincholkar), School of Life Sciences, North Maharasthra University, Jalgaon

2. Krishnamoorthy, Thanuja. **Regulation of the function of eukaryotic initiation factor 2 (eIF2): Effects of vanadium compounds; cloning and characterization of the baculovirus expressed human eIF2 alpha sub unit.** (Dr K V A Ramaiah), Department of Life Sciences, University of Hyderabad, Hyderabad

Microbiology

1 Mishra, Kirti **Improvement of biosurfactant producing strain through genetic manipulation.** (Dr H F Daginawala), Department of Microbiology, Nagpur University, Nagpur.

Zoology

1. Fatima, Kaneez. **Biochemical effects of piperazine compounds (hydrate, adipate and citrate) on paramphistomum cervi, (zeder, 1790) fishchoedher, 1901.** Department of Zoology, Kakatiya University, Warangal

2. Puranik, Shubhangi Sanjay. **Variations in proteins and electrolytes during stress in health and disease in human subjects.** (Dr S A Bhude), Department of Zoology, Nagpur University, Nagpur.

EARTH SYSTEM SCIENCES

Environmental Science

1. Singh, Ruby A. **Cloning and characterisation of an autonomously replicating sequence from azotobacter vinelandii.** (Dr H K Das), School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.

ENGINEERING SCIENCES

Civil Engineering

1. Raji, A K. **Rural road net work planning through transportation related hierarchy of settlement.** (Dr B N Nagaraj and Dr M P Chandrasekharan), Department of Civil Engineering, University of Calicut, Calicut.

Electrical Engineering

1. Sarat Chandra, Babu, N. **Effecient techniques for fault diagnosis of analog circuits using dictionary approach.** (Prof V C Prasad), Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi.

Electronics

1. Rao, P Mallikharjuna. **Investigations for the generation of optimum narrow beams from array antennas.** (Prof G S N Raju), Department of Electronics and Communication Engineering, Andhra University, Waltair.

Energy

1. Gupta, Anita. **Pressure pulsation and condition monitoring studies of multistage reciprocating compressor.** (Dr G S Yadava), Department of ITMMEC, Indian Institute of Technology Delhi, New Delhi.

2. Sen, Subir **On some aspects of optimal thermal generating unit commitment.** (Prof D P Kothari), Department of Energy, Indian Institute of Technology Delhi, New Delhi

Mechanical Engineering

1 Abdul, Khaliq **Some studies on pulse gas metal arc welding (PGMAW) of AL-Zn-Mg alloy.** (Prof R S Parmar), Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi.

2. Aggarwal, Abhinav. **Flexibility, integration and automation framework to assist CIM development : An IT effectiveness perspective.** (Dr S Wadhwa and Prof N K Tewari), Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi.

3 Puri, Charu. **Dynamics of land degradation : A systems dynamics approach.** (Prof Mira Madan and Prof P L Dhar), Department of Mechanical Engineering, Indian Institute of Technology Delhi, New Delhi.

MATHEMATICAL SCIENCES

Mathematics

1 Bhavani, Durga. **Stability and sensitivity in topological dynamics.** (Prof K Viswanath), Department of Mathematics, University of Hyderabad, Hyderabad.

2 Gupta, Binod Kumar **On the study of heat transfer rate in the laminar boundary layer with suction/blowing.** Department of Mathematics, Vinoba Bhave University, Hazaribag.

3 Kumar, Prabhat **A study of some mathematical aspects of thermoelasticity.** (Dr P C Wankhede), Department of Mathematics, Nagpur University, Nagpur.

4. Rafi, V, Mohammad. **Numerical methods and special functions.** (Dr C L Parihar), Department of Mathematics, Devi Ahilya Vishwavidyalaya, Indore.

5. Saxena, Ravi Ratna. **Contributions to the theory of estimation parameters and construction of incomplete arrays and block designs.** (Dr K S Kushwaha), Department of Mathematics, Rani Durgavati Vishwavidyalaya, Jabalpur.

MEDICAL SCIENCES

1. Kapoor, Gurpreet Singh. **Characterization of leishmania genus by restriction fragment length polymorphism using different recombinant gene probes.** Department of Immunopathology, Postgraudate Institute of Medical Education and Research, Chandigarh.

2. Ratna, J Vijaya. **Studies on microencapsulation by cellulose polymers and design of SR microcapsules of diclofenac.** (Prof K P R Chowdary), Department of Pharmaceutical Sciences, Andhra University, Waltair.

3 Suresh, Sudha. **Effect of information processing strategies on the topography of event related potentials and their source localization.** (Dr C R Mukunda and Dr Amrita Y Rai), Department of Neurophysiology, National Institute of Mental Health and Neuro Sciences, Bangalore.

PHYSICAL SCIENCES

Chemistry

1 Das, Rekha. **Substitution of strontium and barium in bone mineral.** (Dr P N Patel and Dr Balaram Nanda), Department of Chemistry, Sambalpur University, Burla.

2. Kapoor, Neeta **Synthetic and electrochemical studies on heterocyclic derivatives and their precursors.** (Dr Partibha Sharma), Department of Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

3. Krishna, K Venkata. **Oxidation of nucleic acid constituents by trivalent silver : A kinetic study.** (Dr P Jaya Prakash Rao), Department of Chemistry, Osmania University, Hyderabad.

4. Madhukar, J **Purification and characterization of riboflavin binding protein from egg-white and egg-yolk of hen (Gallus gallus) and quail (Coturnix coturnix).** (Prof M S K Prasad), Department of Chemistry, Kakatiya University, Warangal

5. Mandloi, Manorama. **Studies on topological modelling of drug activity.** (Dr Shobha Joshi and Dr P V Khadilkar) Department of Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

6. Mohamed, Ajay K. **Synthesis and characterization of novel macrocyclic moieties with N and O as donor atoms and study of their reactivity towards metallic substrates.** (Dr M Shakir), Department of Chemistry, Aligarh Muslim University, Aligarh.

7. Narayana, K Venkata. **Development of novel vanadia based catalysts and optimization of process parameters using statistically designed experiments for ammoxidation of 3-picoline.** (Dr P Kanta Rao), Department of Chemistry, Osmania University, Hyderabad.

8. P V Ravi, Kumar. **Studies on the impact of opencast and underground coal mining activities on the environment.** (Dr N

Someswara Rao), Department of Chemistry, Andhra University, Waltair

9 Rao, V Keshava **Photochemistry of some isoxazoles and synthesis of fused isoxazoles.** (Prof A Krishna Murthy), Department of Chemistry, Kakatiya University, Warangal

10 Sud, Kuldip Chand **Radiotracer studies on transformation and availability of phosphorus and sulphur in soils of Shimla and Lahaul area (Himachal Pradesh)** and their assimilation by potato point in Shimla soils Department of Chemistry, Himachal Pradesh University, Shimla.

11 Vora, Jabali Jayakrishna. **Equilibrium and analytical studies on some heterochelates of transition and inner transition elements with ligands containing oxygen, nitrogen and/or sulphur donor atoms.** (Dr J D Joshi), Department of Chemistry, North Gujarat University, Patan

12 Warad, Dayanand U **Study of synthesis, structure and reactivity of metal complexes derived from carbonydrazide ligands** (Dr B S Chandershekhar), Department of Chemistry, Gulbarga University, Gulbarga

Physics

1 Choukuse Manoj Shyamsunder **X-Ray and related investigations of mixed cobalt ferrites.** (Dr D K Kulkarni), Department of Physics, Nagpur University, Nagpur

2 Darokar, Suresh Sampatrao **Crystallographic magnetic and other related studies of mixed hexaferrites of lithium.** (Dr D K Kulkarni), Department of Physics, Nagpur University, Nagpur

3 Nadendla, Hari Babu **Study of microstructural and magnetic properties of melt textured NdBCO superconductor.** (Dr T Rajasekharan), Department of Physics, University of Hyderabad, Hyderabad

4 Palai, Parthasarathi. **Studies on dispersion compensating fibers and erbium doped fiber amplifiers.** (Prof K Thyagarajan and Prof B P Pal), Department of Physics, Indian Institute of Technology Delhi, New Delhi

5 Panini, Venkata Patanjali. **Study of ReBCO and BSCCO superconductors at radio and microwave frequencies.** (Dr V Seshu Bai), Department of Physics, University of Hyderabad, Hyderabad

6 Prasad, N D Narasimha **The response of coronal magnetic phenomena to the changes in the photospheric magnetic field** (Dr P Venkatakrishnan), Department of Physics, Bangalore University, Bangalore

7 Reddy, E Sudhakar **Microstructural studies of REBa2 Cu3 O7 (RE=Y, Gd) superconductors and a process for their near-net shape fabrication.** (Dr T Rajasekharan), Department of Physics, University of Hyderabad, Hyderabad

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